

CLAIMS:

1. A self-lubricating bearing for use in low pressure, high frequency, small amplitude applications, the bearing having a self-lubricating liner and a counterface surface in close sliding contact therewith, the counterface surface having a surface finish of less than 20nm and a hardness of less than in the region of 1000VPN.
2. A self-lubricating bearing according to Claim 1, wherein the surface finish of the counterface surface is in the range of 5nm to 20nm.
3. A self-lubricating bearing according to Claim 1 or 2, wherein the counterface surface comprises a coating on a curved surface, the curved surface having an electrolytically ground finish.
4. A self-lubricating bearing according to Claim 3, wherein the coating over the electrolytically ground finish has a thickness of between 1-5µm.
5. A self-lubricating bearing according to Claim 3 or 4, wherein the coating is a chemical deposition coating, a physical vapour deposition coating or an ion plating coating.
6. A self-lubricating bearing according to any preceding claim, wherein the bearing is a spherical bearing.
7. A self-lubricating bearing according to Claim 6, wherein the spherical bearing includes a ball, the ball providing the counterface surface.

8. A self-lubricating bearing according to any preceding claim, wherein the operating conditions, in use, are at stresses of less than 35MPa, at a frequency of at least 0.1 Hz and with amplitudes comprising small angular motions of less than $\pm 12^\circ$ rotation.

9. A method of constructing a self-lubricating bearing comprising the steps of:

- providing a self-lubricating liner with a curved surface;
- providing a counterface having a curved surface;
- electrolytically grinding the curved surface of the counterface to a surface finish of less than 20nm to produce a counterface surface having a hardness of less than 1000VPN; and
- placing the curved surfaces of the liner and the counterface surface in sliding contact with one another.

10. A method according to Claim 9, wherein the curved surfaces are correspondingly curved surfaces.

11. A method of operating a self-lubricating bearing having a self-lubricating liner and a counterface surface in close sliding contact therewith, the counterface surface having a surface finish of less than 20nm and a hardness of less than 1000VPN, wherein the operating conditions are at stresses of less than 35MPa, at a frequency of at least 0.1 Hz and with amplitudes comprising small angular motions of less than $\pm 12^\circ$ rotation.

12. A self-lubricating bearing substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

13. A method of constructing or operating a self-lubricating bearing substantially as hereinbefore described with reference to and as shown in the accompanying drawings.